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OCCURRENCE OF SOIL DISEASES IN INTERCROPPING OF LIMA BEAN LANDRACES WITH MAIZE

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INTRODUCTION: The lima bean culture, if technically exploited, may cause great changes in the socio economic reality of the producing regions of Northeast Brazil. The commitment to the development of technologies for lima bean culture will result in a significant increase in yield, improvement in quality, which directly affecting in the quality of life's farmer (Neto Barreiro et al. 2015). In this work, we aimed to perform the agronomic evaluation of eight lima bean landraces to identify those with potential for cultivation.

MATERIAL AND METHODS: The experiment was carried out in area of the Department of Agriculture of the Federal University of Piauí, in Teresina, Piauí, Brazil. We evaluated twelve lima bean landraces from six Northeastern Brazilian states (Table 1). The landraces present an indeterminate growth habit and the cultivation was intercropped with corn, variety AL Piratininga, which offered support to the legume. A completely randomized experimental design was used, with four replications. Each plot was composed of four rows of 5.0 m, spaced 0.80 m x 0.70 m. In corn, fertilization at planting consisted of 30 kg ha^{-1} of N from ammonium sulfate, 270 kg ha^{-1} of P_2O_5 from single superphosphate and 85 kg ha^{-1} of K_2O from potassium chloride, based on soil analysis. Three topdressing fertilizations were made with 180 kg ha^{-1} of N and 90 kg ha^{-1} of K_2O at the rate of 40% with 4 to 6 leaves; 40% with 8 to 10 leaves, and 20% with 12 leaves. The sowing of the bean was done in pits, soon after the emergence of the corn. The fertilization consisted of one kg of bovine manure, 20 kg ha^{-1} of N, 40 kg ha^{-1} of P_2O_5 and 30 kg ha^{-1} of K_2O, at the planting time. Weed control was performed with manual weeding during the crop cycle.

Table 1 – Lima beans landraces with their respective origin and seed color, evaluated in intercropping with corn in Teresina, Piauí State, Brazil, 2016.

Landrace	Origin	Seed color
Fava branca	Pedra Branca - CE	Branca
Fava branca	Riachão - MA	Branca
Fava branca	Riachão - MA	Branca
Fava branca	Nova Colina - MA	Branca
Boca de moça	Palmeirais - PI	Rajada (branco e marrom)
Fava branca	Picuí – PB	Branca
Cara larga	Remígio – PB	Rajada (branco e vermelho)
Rosinha	Remígio – PB	Rosa
Fava rosa	Areios – PE	Rosa
Fava branca	Surumbi – PE	Branca
Fava branca	Surumbi – PE	Rajada (branco e preto)
Fava branca	Maceió – AL	Branca

RESULTS AND DISCUSSION: The experiment was conducted in an area previously cultivated with lima bean. Sequence cultivation of this legume caused a favorable environment for the multiplication of soil fungus, Macrophomina phaseolina n Rhizoctonia solani, which caused death in the plants. The diseased plants had necrotic lesions on the roots, stems, branches and stems, reaching the pods. M. phaseolina is an important phytopathogenic fungus that infecting more than 500 plant species, including crops of economic importance such as soybeans, beans, corn, cotton, sunflower, peanut and castor bean (Gupta et al., 2012). In Brazil, this pathogen has caused damage to several cultivated species (Almeida et al., 2001). Seeds become the main source of dissemination in the most affected crops (Ndiaya, 2007) Cultural control can be done with early planting to close the canopy earlier, contributing to the reduction of soil temperature. In addition, dense populations, adequate levels of P and K, and soil water stress should be avoided. Chemical control is done by fungicides. R. solani fungi are classified as imperfect fungi that live on the soil saprophytically or exert parasitism on several annual or perennial crops, animals and other fungi present in this environment. The action of these fungi is related to the symptoms of seedling felling and root rot of plants. According to Goulart (2008), the control of R. solani is done through the combination of fungicides. In this experiment, even with the severity of these fungi, pods were harvested in the "Fava branca" of Riachão - MA, "Cara larga" of Remígio - PB, "Fava branca" and “Fava rajada” of Surubim - PE. Seed production in these landraces may indicate sources of resistance to M. phaseolina and R. solani.

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